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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,342	10/11/2005	Roland Callens	05129-00090-US	7211
23416 7590 02/25/2009 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899				
EXAMINER				
WONG, EDNA				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/527,342

Applicant(s)

CALLENS ET AL.

Examiner

EDNA WONG

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-49 and 55-64 is/are pending in the application.
- 4a) Of the above claim(s) 41-49 and 55-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-40 and 59-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :March 10, 2005 and September 12, 2005.

Election/Restrictions

Applicant's election with traverse of Group I, claims **30-40 and 59-64**, in the reply filed on December 12, 2008 is acknowledged. The traversal is on the ground(s) that the claims of the present invention would appear to be part of an overlapping search area. A search and examination of the entire application would not place a *serious* burden on the Examiner. This is not found persuasive because the scope of the organic compound salt of general formula A-X-Y, as presently claimed, wherein A means an organic residue, X means a charged group and Y means a counter-ion is so broad that the search for the organic compound salt is a burden alone, and since Group I is directed to a method of carrying out an electrochemical reaction and Group II is directed to a process for production of an organic compound, their method requires a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries); and the prior art applicable to one invention would not likely be applicable to another invention.

The requirement is still deemed proper and is therefore made FINAL.

Accordingly, claims **41-49 and 55-58** are withdrawn from consideration as being directed to a non-elected invention.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single

paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the word "means" is used in lines 3 and 11-13. Correction is required. See MPEP § 608.01(b).

Claim Objections

Claims **33-34** and **59-63** are objected to because of the following informalities:

Claim 33

line 2, "(PhSO₃)" should be amended to -- (PhSO₃⁻) --.

Claim 34

line 3, "PhSO₃" should be amended to -- PhSO₃⁻ --.

Claim 59

line 1, the word "of" should be amended to the words -- according to --.

Claim 60

line 1 (first occurrence), the word "of" should be amended to the words --

according to --.

Claim 61

line 1, the word "of" should be amended to the words -- according to --.

Claim 62

line 1 (first occurrence), the word "of" should be amended to the words --
according to --.

Claim 63

line 1 (first occurrence), the word "of" should be amended to the words --
according to --.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

I. Claims **33-38, 40 and 64** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33

line 1, "the group Y" lacks antecedent basis.

Claim 34

line 1, "the group Y" lacks antecedent basis.

Claim 35

line 3, recites the formula "R1R2R3C-T-Q-X Y".

Parent claim 30, line 4, recites the formula "A-X Y".

Where is the organic residue "A" in the formula "R1R2R3C-T-Q-X Y"?

The claim language never recites that "R1R2R3C-T-Q" is "A".

Claim 40

line 3, recites the formula "R1R2R3C-NR4-Q-NR₃⁺Y".

Parent claim 35, line 3, recites the formula "R1R2R3C-T-Q-X Y".

Where is the organic residue "A" in the formulas?

Where is the activating group T in the formula "R1R2R3C-NR4-Q-NR₃⁺Y"?

Where is the charged group "X" in the formula "R1R2R3C-NR4-Q-NR₃⁺Y"?

The claim language never recites that "NR₃⁺" is "X" and "NR4" is "T".

Claim 64

line 1, "said electrooxidation stage" lacks antecedent basis.

II. Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being

incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the group T and the formula $R1R2R3C-NR4-Q-NR_3^+Y^-$.

Claim 40

line 5, recites "and linked to the group T". "T" is in the formula recited in parent claim 35, line 3. Thus, what does it have to do with the formula " $R1R2R3C-NR4-Q-NR_3^+Y^-$ " recited in claim 40, line 3?

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims **30-33, 35-39 and 59-62** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Dutcher et**

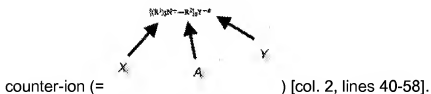
al. (US Patent No. 4,931,155).

Dutcher teaches a method of carrying out an electrochemical reaction (= the electrolytic reductive coupling of quaternary ammonium compounds) [col. 1, lines 7-11] which comprises:

- reacting a reagent in the electrochemical reaction wherein said reagent comprises an organic compound salt of general formula:



wherein A means an organic residue, X means a charged group and Y means a



The group X is a cationic group (= $(R^1)_3N^+$) [col. 2, line 45].

The group X is NR_3^+ and R is one or several organic residues (= $(R^1)_3N^+$, wherein each R^1 is independently an alkyl group containing from 1 to about 10 carbon atoms, a hydroxyalkyl or alkoxyalkyl group containing from 2 to about 10 carbon atoms, an aryl group, or two of the R^1 groups together with the nitrogen atom form a heterocyclic group, provided that if the heterocyclic group contains a $-C=N-$ group, the third R^1 group is the second bond) [col. 2, lines 45-54].

The group Y is Br^- , Cl^- , ClO^- , BF_4^- , PF_6^- , toluene-sulphonate (Tos^-) or benzenesulphonate ($PhSO_3^-$) [col. 4, lines 5-15].

The organic compound salt corresponds to the formula



wherein

$R^1R^2R^3C$ means a substituted carbon atom, capable of reacting in the electrochemical reaction,

T means an activating group for the electrochemical reaction and

Q means a connecting group linking the activating group T and the charged group X (= substituted pyrrolidines) [col. 3, lines 11-22].

The group T is NR^4 , O or S wherein R^4 is a hydrogen atom or an organic residue (= pyrrolidine) [col. 3, lines 11-22].

The group Q is a linear or branched alkylene or cyclo-alkene group, optionally substituted with a functional group and optionally linked to the group T by a functional selected from the group consisting of $-(C=O)-$, $-N-(C=O)-$, $-O-(C=O)-$, $-(S=O)-$, $-N-(S=O)-$, $-SO_2-$, $-N-SO_2-$, $-(C=S)-$ and $-N-(C=S)-$ [R^2 in Formula I may be a hydrocarbyl group containing olefinic unsaturation, or R^2 may be a hydrocarbyl group containing a substituent which is electrolytically reactive or removable under the conditions of the reaction) [col. 3, lines 23-42].

At least R^3 is hydrogen (= pyrrolidine) [col. 3, lines 11-22].

The organic compound salt comprises at least one stereogenic center and is enantiomerically pure (= $[(R^1)_3N^+-R^2]_aY^{-a}$) [col. 2, line 45].

The organic compound salt is provided as a solution in a solvent (col. 4, lines 42-

46)

The solvent is inert under conditions of said electrochemical reaction (= the solution charged to the electrolytic cell may be an aqueous solution or organic solution containing a proton source such as H_2SO_4 , NH_4Cl , etc. Alcohol solvents such as methanol can be used. Aqueous solutions generally are preferable) [col. 4, lines 42-46].

The method further comprises reacting said reagent comprising said organic compound salt with at least one co-reactant capable of reacting with said organic compound salt (= in addition to the quaternary ammonium compounds, the aqueous solutions charged to the electrolytic cell also may contain other reactive organic compounds which can be coupled with the electrolytically reduced quaternary ammonium compounds) [col. 5, lines 18-44].

The solvent is itself a co-reactant capable of reacting with said organic compound salt (= the solution charged to the electrolytic cell may be an aqueous solution or organic solution containing a proton source such as H_2SO_4 , NH_4Cl , etc. Alcohol solvents such as methanol can be used. Aqueous solutions generally are preferable) [col. 4, lines 42-46].

II. Claim **30** is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Thurmuller et al.** (US Patent No. 6,663,764 B2).

Thurmuller teaches a method of carrying out an electrochemical reaction (=

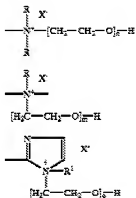
electrochemically oxidizing hydroxyl groups of β -hydroxyethylammonium compounds)

[col. 2, lines 61-65] which comprises:

- reacting a reagent in the electrochemical reaction wherein said reagent comprises an organic compound salt of general formula:



wherein A means an organic residue, X means a charged group and Y means a counter-ion (= all compounds which contain at least one quaternary amino group and at least one OH group, preferably of the formulae (I) and/or (II) and/or (III):



) [col. 3, line 66 to col. 4, line 31].

The method comprises the electrooxidation of said organic compound salt (= electrochemically oxidizing hydroxyl groups of β -hydroxyethylammonium compounds) [col. 2, lines 61-65].

The electrooxidation stage is carried out at a temperature of from -50 to 100°C (= 20 to 80°C) [col. 3, lines 44-45].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- I. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Dutcher et al.** (US Patent No. 4,931,155) as applied to claims 30-33, 35-39 and 59-62 above.

Dutcher is as applied above and incorporated herein.

The method of Dutcher differs from the instant invention because Dutcher does not disclose wherein the group Y is a mixture consisting essentially of 90 to 99.5% by weight of at least one ion selected from the group consisting of ClO^- , BF_4^- , PF_6^- , Tos^- and PhSO_3^- and 0.5 to 10% by weight of Cl^- , as recited in claim 34.

Dutcher teaches:

The quaternary ammonium compounds (I) utilized in the present invention contain an anion (Y^-). ***The nature of the anion is not critical as long as the anion does not interfere with the desired electrolytic reduction and coupling reactions of the invention. Suitable anions include: hydroxide, halides such as chloride, bromide, fluoride and iodide, sulfates and hydrogen sulfates, phosphates including hydrogen phosphates, borates, carbonates, nitrates, tetrafluoroborates, hexafluorophosphates, and tetraphenylborates.*** Generally the anion Y^- is an anion of an oxidized mineral acid. When the electrolytic reaction is conducted in an undivided cell (e.g., FIG. 1), it is preferred that the anion is chosen from those anions which are not oxidized at the anode or reduced at the cathode under the conditions of the reaction, and those which do not give harmful products when oxidized. The value of a in Formula I is equal to the valence of Y^- . For example, when Y^- is hydroxide or a halide, a is equal to 1; when Y^- is the sulfate anion, a is equal to 2; etc. (col. 4, lines 5-25).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to have modified the group Y described by Dutcher with wherein the group Y is a mixture consisting essentially of 90 to 99.5% by weight of at least one ion selected from the group consisting of ClO^- , BF_4^- , PF_6^- , Tos^- and PhSO_3^- and 0.5 to 10% by weight of Cl^- because Dutcher teaches that the nature of the anion is not critical as long as the anion does not interfere with the desired electrolytic reduction and coupling reactions of the invention; and it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught by the prior art (MPEP § 2144.06).

II. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Dutcher et al.** (US Patent No. 4,931,155) as applied to claims 30-33, 35-39 and 59-62 above, and further in view of **Moingeon et al.** (US Patent No. 4,824,532).

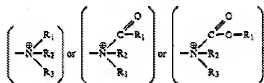
Dutcher is as applied above and incorporated herein.

The method of Dutcher differs from the instant invention because Dutcher does not disclose wherein the organic compound salt corresponds to the formula



wherein the group Q is a linear or branched alkylene group, optionally substituted with a functional group and linked to the group T by a functional selected from the group consisting of $-(\text{C}=\text{O})-$, $-\text{N}-(\text{C}=\text{O})-$, $-\text{O}-(\text{C}=\text{O})-$ and $-\text{SO}_2-$, as recited in claim 40.

Like Dutcher, Moingeon teaches the electrochemical reduction of an organic compound of the general formula R-Y, wherein R is an organic radical and Y is a hetero atom-containing radical (col. 2, lines 20-55). When the hetero atom is nitrogen, Y is necessarily an ammonium radical:



(col. 2, lines 56-66).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the organic compound salt described by Dutcher with wherein the organic compound salt corresponds to the formula



wherein the group Q is a linear or branched alkylene group, optionally substituted with a functional group and linked to the group T by a functional selected from the group consisting of $-(\text{C}=\text{O})-$, $-\text{N}(\text{C}=\text{O})-$, $-\text{O}(\text{C}=\text{O})-$ and $-\text{SO}_2-$ because substituting the $(\text{R}^1)_3\text{N}^+$ disclosed by Dutcher with the $(\text{R}^1)_2-(\text{C}=\text{O})-\text{R}^1$ or $(\text{R}^1)_2-(\text{C}=\text{O})-\text{OR}^1$ disclosed by Moingeon would have been a functionally equivalent as the ammonium radical in the organic compounds as taught by Moingeon (col. 2, lines 20-66).

IV. Claims **63** and **64** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Thurmuller et al.** (US Patent No. 6,663,764 B2) as applied to claim 30 above.

Thurmuller is as applied above and incorporated herein.

The method of Thurmuller differs from the instant invention because Thurmuller does not disclose wherein said electrooxidation is carried out at a current density of from 0.1 to 50 A/dm², as recited in claim 63.

Thurmuller teaches a current strength of 2 A (col. 5, line 22) and 1.0 A (col. 5, line 28).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electrooxidation described by Thurmuller with wherein said electrooxidation is carried out at a current density of from 0.1 to 50 A/dm² because the current density is a result-effective variable and ordinary skill in the art has the skill to calculate the current density that would have determined the success of the desired reaction to occur, i.e., electrooxidation of the β -hydroxyethylammonium compounds (MPEP § 2141.03 and § 2144.05).

It is held that changes in the current density is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re*

Aller, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDNA WONG whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edna Wong/
Primary Examiner
Art Unit 1795

EW
February 12, 2009